# 2.2 Compliance Status

*D. G. Black*

This section summarizes the activities conducted to ensure that the Hanford Site is in compliance with federal environmental protection statutes and related state and local environmental protection regulations. Also discussed is the status of compliance with these requirements. Environmental permits required under the environmental protection regulations are discussed under the applicable statute.

## Hanford Federal Facility Agreement and Consent Order, 1996 Performance

The Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement; Ecology et al. 1989) was signed on May 15, 1989 by the DOE, the EPA, and the Washington State Department of Ecology. The Tri-Party Agreement is a legally enforceable document that establishes a schedule and framework for the cleanup of the Hanford Site. Specifically, the Tri-Party Agreement commits the DOE to achieve compliance with the Comprehensive Environmental Response, Compensation, and Liability Act remedial action provisions and with the Resource Conservation and Recovery Act treatment, storage, and disposal unit regulations and corrective action provisions including the state's implementing regulations.

In 1996, there were 64 specific cleanup commitments scheduled for completion under the terms of the Tri-Party Agreement. All 64 commitments were completed on or before their required due dates.

From 1989 through 1996, a total of 512 enforceable Tri-Party Agreement milestones and 223 unenforceable target dates had been completed on or ahead of schedule. Two enforceable milestones were missed and five were completed later than scheduled.

Highlights of the work accomplished in 1996 under the terms of the Tri-Party Agreement are listed in Section 2.3, "Accomplishments and Issues."

## Environmental Management Systems Development

On October 1, 1996, Fluor Daniel Hanford, Inc., the new site management and integration contractor, signed a letter of commitment to support the DOE Richland Operations Office request that it develop an environmental management system at the Hanford Site. This system is to be consistent with the principles of the International Organization of Standards (ISO) 14000-series of standards (Cascio 1996).

An environmental management system provides a systematic approach by organizations to develop an environmental policy and to fulfill commitments made in the policy. Through planning, implementation, checking, management review, and continuous improvement, organizations become more efficient in managing their environmental activities.

The ISO 14001 standard (American Society for Testing and Materials 1996) is one of several tools available in the series for specific guidance on development of an environmental management system and shares common management system principles with the ISO 9000-series of quality system standards (Peach 1997). The difference is that ISO 9000 addresses quality and customer needs, whereas ISO 14000 addresses the needs of a broad range of interested parties for environmental protection. Another tool similar to the ISO 14000-series being pursued by the Hanford Site includes the interagency voluntary protection program.

Because the Hanford Site has been closely regulated by environmental agencies and the DOE, many environmental management system elements are in place. It may be possible to develop an ISO 14001-consistent environmental management system by adapting the existing management system elements. To evaluate management system elements that exist under the Fluor Daniel Hanford, Inc. umbrella against the ISO 14001 standard, a gap analysis

was conducted by Hanford contractors in late 1996, and a needs assessment report was generated for Fluor Daniel Hanford, Inc. and its major subcontractors. The information collected for the gap analysis and needs assessment is being combined with a schedule for use in developing an environmental management system implementation plan for the Hanford Site. The final plan is scheduled for submittal to DOE by July 1, 1997.

The environmental restoration contractor is reviewing its existing management system to evaluate its elements against the ISO 14001 standard. The gap analysis and needs assessment are being combined and will result in an environmental management system implementation plan by July 1997. The plan will recommend actions and responsibilities for bringing the environmental management system into conformance with the ISO 14001 standard.

The research-and-development contractor evaluated its environmental management system against ISO 14001 standards in 1996 and a gap analysis was prepared. The system includes values of the ISO 14001 standard as well as the Chemical Manufacturer's Association's Responsible Care® program. Battelle Memorial Institute, which operates the Pacific Northwest National Laboratory for the DOE, has partner status in Responsible Care®. System improvements have been identified through the gap analysis. The Pacific Northwest National Laboratory's system, while separate, will coordinate with the environmental management system being developed by the management and integration contractor.

## Environmental Performance Indicator Program

The environmental performance indicator program is in development as part of the Integrated Safety Management System Plan scheduled for completion in late fiscal year 1997. The program will be finalized for integration with the plan, and will be reviewed and revised accordingly. The environmental performance indicator program is based on the development of an "environmental event" definition that can be used to implement environmental performance measures to support an effective environmental protection program. The approach is to establish a baseline of environmental events. This baseline will provide a means to evaluate the premise that a relationship exists between the number of lesser environmental events or "questionable practices" and the number of significant environmental events (i.e., the greater the number of questionable practices, the greater the probability of a more significant event). An environmental event is defined as any event that if allowed to persist or escalate would result in one or more of the following actions or circumstances:

- threaten public health and safety
- result in an environmental occurrence report being generated (DOE Order 232.1)
- be placed on a facility's open item (uncompleted action) list
- be placed on a facility status report (e.g., Plutonium Finishing Plant Morning Status Report)
- be reported on an internal or external facility inspection or evaluation report as a finding or an observation
- be placed on the Hanford Action Tracking System
- be a potential threat to an environmental/ecological resource, regardless of the severity
- trigger any local, state, or federal reporting requirement or action level; or, otherwise raise interest or concern of such agencies.

An example of a questionable practice would be continuous, small, nonreportable spills or releases such as with petroleum products. Securing a commitment by all employees to look for questionable practices is a key aspect of bringing about an environmental step change at the Hanford Site. If all employees become sensitive to a condition that might develop into a more significant environmental event and early mitigation action taken, progression to a more significant event would be prevented. In addition to heightening employee awareness, it is expected that questionable practices also would routinely be identified through an evaluation of self-assessment, regulatory inspection, or formal audit results and by environmental information collection and trending. More significant environmental events or consequences could include regulatory reportable events, notice of correction, notice of violation, fines, and penalties.

The incentive fee paid to the Pacific Northwest National Laboratory in 1996 was tied to a number of performance

indicators set by DOE. Several of these indicators were related to environmental performance, including some innovative "leading" indicators (i.e., indicative of future performance) such as waste reduction in several different waste categories and correction of previously identified waste management noncompliances. Fees paid to the management and integration contractor are based on meeting performance agreements. These agreements cover specific actions required to proceed with the site's cleanup mission. This fee payment concept began with contract transition in October 1996.

## Environmental Information Collecting and Trending

To initiate the environmental information collection and trending aspect of this approach, information for the following environmental events will initially be collected and trended:

- all spills/releases/permit exceedances
- notices of correction/notices of violation
- environmental occurrences (as defined by DOE Order 232.1)
- Resource Conservation and Recovery Act permit facility-wide inspection findings
- 90-day accumulation area time extensions.

Attention must be given to the cumulative impact of increasing questionable practices. A small increase in each of these may not appear significant unless added together. Therefore, information on these events will be collected individually but reported collectively on one control chart. Initially, spills and releases also will be reported separately for special attention and to limit overshadowing of the other events. Explanations for trends will be addressed individually, as warranted.

Periodically, the environmental event list subject to information collection and trending will be evaluated and modified if necessary. Before any changes are made to the list, a review will be requested from project and line management so that any resource and/or schedule impacts can be fully assessed and planned for.

# Comprehensive Environmental Response, Compensation, and Liability Act

## Environmental Restoration Disposal Facility

The July 1996 opening of the Environmental Restoration Disposal Facility, 3 months ahead of schedule, was a major step toward full-scale cleanup under the Comprehensive Environmental Response, Compensation, and Liability Act. The 1.5-million-$m^3$ (2.0-million-$yd^3$) earthen facility is located near the 200-West Area and is constructed with double liners and a leachate collection system. The facility will serve as a central disposal site for contaminated soil generated during the Hanford cleanup. Wastes generated during site investigations, decontamination and decommissioning of facilities, and Resource Conservation and Recovery Act sites undergoing closure can be disposed of at the facility in accordance with a Comprehensive Environmental Response, Compensation, and Liability Act record of decision or action memorandum.

## Waste Site Remediation Projects

Full-scale remediation of waste sites began in the 100 Areas in 1996. Early in the year, a design for remediation of wastes in the 100-B,C Area was completed based on Record of Decision (1995), followed by the completion of designs for remediation of waste sites in the 100-D and 100-H Areas and for additional sites in the 100-B,C Area. Remediation of liquid waste disposal sites in the 100-B,C Area occurred throughout the year, and remediation of similar sites in the 100-D Area began in November. In 1996, 87,000 metric tons (96,000 tons) of contaminated soil had been excavated from sites in the 100-B,C and 100-D Areas and disposed of at the Environmental Restoration Disposal Facility. In addition, nearly 3,100 $m^3$ (4,100 $yd^3$) of contaminated soil excavated as part of a test in 1995 to see if waste was treatable were disposed of at the facility.

A plan proposing excavation of contaminated soils at liquid waste disposal sites in the 300 Area was issued for public review. In July, Record of Decision (1996a) was

signed and design for remediation was initiated. Additional evaluations are under way to address solid waste disposal sites in the 300 Area.

## Groundwater Projects

Chromium-contaminated groundwater that underlies portions of the 100-D, 100-H, and 100-K Areas (the 100-HR-3 and 100-KR-4 Operable Units) is of potential concern to the Columbia River ecosystem and prompted an interim remedial measure to address the movement of chromium to the river. Chromium is toxic to aquatic organisms, particularly those that use the riverbed sediment as habitat (e.g., fall chinook salmon) (DOE 1995b, 1995c). In 1994, a groundwater extraction system was installed in the 100-D Area to test chromium removal using ion exchange technology. An interim Record of Decision (1996b) was signed that approved full-scale implementation of groundwater extraction and chromium treatment systems in the three areas. The test system continued to operate until September 1996 when it was shut down to allow construction of the full-scale systems (DOE 1995d). From January through September 1996, the test system treated 17.6 million L (4.6 million gal) of contaminated groundwater and recovered 14 kg (31 lb) of chromium. Construction of the full-scale systems began in October 1996 and is expected to be completed in 1997. Extensive performance monitoring will be conducted to determine how effectively and efficiently the systems are working at removing chromium from the aquifer. Information gained from experience with this interim remedial measure will be used to help select a final remediation alternative for groundwater underlying the 100 Areas.

As part of the remedial investigations being conducted under the Comprehensive Environmental Response, Compensation, and Liability Act, groundwater samples have been obtained from a variety of sampling locations along the Columbia River shoreline. Most attention to date has been focused on chromium-contaminated groundwater in the 100-D,DR and 100-H Areas. The Columbia River along these areas provides distinctive riverbed materials for salmon to use as spawning habitat (Dauble and Watson 1990). Early life stages of salmon are susceptible to the toxic effects of chromium. Alevin that emerge from the eggs and remain in riverbed sediment are particularly vulnerable to contamination carried by groundwater, which discharges into the river through the riverbed.

Environmental restoration decisions regarding the need for interim remedial measures to protect the river from chromium contamination were being developed in 1995. A field project was started in early 1995 to obtain better insight on chromium contamination that is carried into the river environment by groundwater flow. Divers emplaced sampling tubes into the riverbed sediment and collected samples of sediment pore water, which was analyzed for hexavalent chromium–the most toxic variety. Sampling tubes were also emplaced at multiple depths in the aquifer at adjacent shoreline locations. With these new observational data, it became possible to describe chromium contamination along the entire pathway, from Hanford Site sources, across the shoreline region, and on to the point of exposure by a sensitive receptor.

Initial field activities were conducted along the 100-H Area shoreline and consisted primarily of collecting riverbed sediment pore water (Hope and Peterson 1996a). A second, more comprehensive phase of the project was conducted in the 100-D,DR Area during October and November 1995 (Hope and Peterson 1996b). Hexavalent chromium at concentrations exceeding the EPA's 11-µg/L ambient water quality criteria (EPA 1996) for protection of aquatic organisms was found at several locations in each reactor area. The majority of substrate sampling sites did not reveal chromium contamination at the 46-cm (18-in.) sediment depth sampled. Chromium concentrations in shoreline aquifer sampling tubes adjacent to the elevated substrate sampling sites also exceeded the 11-µg/L standard and, in some cases, the EPA maximum contaminant level for drinking water (100 µg/L) (EPA 1996).

The field work in the 100-D,DR Area confirmed the previously poorly characterized area of contamination along the shoreline in the western part of the area. It has been suggested that chromium was moved into this area during the reactor operating years, when large mounds were created on the natural water table by the disposal of reactor coolant (Connelly 1997). A new monitoring well has been installed (well 199-D4-1) to better define the nature and extent of this contamination, and four additional wells are planned to be installed during the summer 1997.

The carbon tetrachloride plume in the 200-West Area (underlying the 200-ZP-1 Operable Unit) covers approximately 9 $km^2$ (3.5 $mi^2$). In 1994, a pilot-scale pump-and-treat system was initiated to test the removal of carbon tetrachloride and other organics from the groundwater using liquid phase activated carbon, with the treated groundwater reinjected to the aquifer. Based on the success of the test, a record of decision was signed in March 1995 requiring implementation of a larger system. The pilot-scale system continued to operate as Phase I of the remedial action until the larger Phase II system, capable of

pumping and treating 580 L/min (150 gal/min), started up in August 1996. Phase I, which operated from April 1995 through July 1996, treated 21.4 million L (5.6 million gal) of contaminated groundwater and recovered 63.7 kg (140 lb) of carbon tetrachloride. From August 1996 through December 1996, the Phase II system treated 20.2 million L (5.3 million gal) of contaminated groundwater and recovered 200.2 kg (440 lb) of carbon tetrachloride.

Another groundwater plume in the 200-West Area (underlying the 200-UP-1 Operable Unit) contains uranium and technetium-99. In 1994, a pilot-scale pump-and-treat system was initiated to test the removal of these contaminants from groundwater using ion exchange. The treated groundwater is reinjected to the aquifer. In 1995, a proposed plan was issued identifying expansion of the existing system as the preferred alternative for an interim remedial action. Public comments suggested that the 200 Areas Effluent Treatment Facility be considered as an alternative to expanding the existing system, resulting in a reevaluation of the alternatives. In early 1997, a record of decision was signed that requires the groundwater extracted from the 200-UP-1 Operable Unit wells to be pumped to the 200 Areas Effluent Treatment Facility for treatment. The pilot-scale system operated throughout 1996, treating 88.3 million L (23.3 million gal) of contaminated groundwater and removing 24.9 kg (54.8 lb) of uranium.

Strontium contamination in the groundwater underlying the 100-N Area is a potential concern to the nearby Columbia River. A groundwater extraction and treatment system was started up in September 1995 and successfully operated throughout 1996. During the year, the system processed 86 million L (23 million gal) of contaminated groundwater and removed approximately 0.1 Ci of strontium-90. Meanwhile, two corrective measures studies evaluating long-term remedies for decontaminating groundwater and waste sites in the 100-N Area were prepared and submitted to the Washington State Department of Ecology. Proposed remedies are expected to undergo public review in 1997.

## Vadose Zone Project

A system that extracts carbon tetrachloride vapor from the vadose zone beneath the 200-West Area began in February 1992 and continued through 1996. The soil vapor is passed through granulated activated carbon, which absorbs the carbon tetrachloride. The carbon is then shipped offsite for treatment. In 1996, the system removed approximately 5,720 kg (12,610 lb) of carbon tetrachloride from the vadose zone. Because the rate of removal dropped off substantially in 1996, a study was initiated in November 1996 to determine whether the system was still effective and how it could best be operated.

## N Area Project

The N Area Project was established to coordinate cleanup activities in the 100-N Area and currently includes deactivation and remediation of facilities.

In 1996, 68 facilities in the 100-N Area were deactivated and made ready for decommissioning and 15 facilities were excessed/demolished. Ninety-five percent of the contaminated water and over half the contaminated sludge were removed from the Emergency Dump Basin. Also, 1,500 spent fuel canisters as well as large quantities of contaminated equipment were removed from the N Reactor Fuel Storage Basin. With an emphasis on waste minimization, nearly 155,000 L (41,000 gal) of uncontaminated waste oils were removed from tanks in the 100-N Area and burned for energy recovery; 390 $m^3$ (13,700 $ft^3$) of contaminated materials were removed, decontaminated, and released as nonradioactive materials for excess, reuse, recycle, or disposal; and 201 metric tons (222 tons) of steel were recycled following demolition of their storage tanks. A Comprehensive Environmental Response, Compensation, and Liability Act engineering evaluation/cost analysis that evaluated alternatives for disposing of contaminated waste from 100-N Area deactivation was issued for public review in 1996, and an action memorandum was signed that authorizes the waste to go to the Environmental Restoration Disposal Facility for a substantial cost savings over other alternatives.

## Decommissioning Project

In 1995, DOE and EPA signed a national agreement to decommission contaminated facilities under Comprehensive Environmental Response, Compensation, and Liability Act authority. This agreement was implemented at the Hanford Site in 1996 with the preparation of a Comprehensive Environmental Response, Compensation, and Liability Act engineering evaluation/cost analysis for decommissioning facilities in the 100-B,C Area. After public review, an action memorandum was signed in January 1997 authorizing certain facilities to be removed and the waste disposed under the Comprehensive Environmental Response, Compensation, and Liability Act.

The most visible decontamination and decommissioning project in 1996 was the demolition of two 53-m- (175-ft-) high water towers at the C Reactor. In addition, decommissioning was completed for the 190-D complex, the 183-C facility, the 183-H Solar Evaporation Basins, and the 104-B tritium vault and laboratory.

# Emergency Planning and Community Right-To-Know Act and Pollution Prevention Act, Section 6607

## Community Right-To-Know Activities

The Emergency Planning and Community Right-To-Know Act requires states to establish a process for developing chemical emergency preparedness programs and to distribute information on hazardous chemicals present at facilities within communities. The Act has four major components: 1) emergency planning (Sections 301-303), 2) emergency release notification (Section 304), 3) inventory reporting (Sections 311-312), and 4) toxic chemical release inventory reporting.

Section 301 requires the appointment of a state emergency response commission to coordinate the emergency planning process. The state was divided into local planning districts, and local emergency planning committees were established for each district. Section 302 requires facilities that use, produce, or store extremely hazardous substances in quantities equal to or greater than the listed threshold planning quantity to notify the state emergency response commission and local emergency planning committee. Covered facilities must also identify an emergency response coordinator to participate in local emergency planning committee activities, including the development of the local emergency response plans required under Section 303.

The Hanford Site has been identified as a covered facility to the Washington State Emergency Response Commission and to three local emergency planning committees: 1) Benton County Department of Emergency Management, 2) Franklin County Office of Emergency Management, and 3) Grant County Department of Emergency Management. During 1996, information regarding the storage of hazardous chemicals and associated hazards was provided to these organizations.

Under Section 304, a facility must immediately notify the state emergency response commission and local emergency planning committee if there is a release of a listed hazardous substance that is not federally permitted, that exceeds the reportable quantity established for the substance, and that results in exposure to persons outside the facility boundaries. The substances subject to these requirements consist of extremely hazardous substances and hazardous substances subject to the notification requirements of the Comprehensive Environmental Response, Compensation, and Liability Act. During 1996, the Hanford Site had no releases that fell under the requirements of the Emergency Planning and Community Right-To-Know Act, Section 304.

Sections 311 and 312 require facilities that store hazardous chemicals in amounts above minimum threshold levels to report information regarding these chemicals to the state emergency response commission, local emergency planning committee, and local fire department. Both sections cover chemicals that are considered physical or health hazards by the Occupational Safety and Health Act Hazard Communication Standard (Title 29, Code of Federal Regulations, Part 1910, Section 1200 [29 CFR 1910.1200]). The minimum threshold level is 4,545 kg (10,000 lb) for a hazardous chemical, or 227 kg (500 lb), or the listed threshold planning quantity, whichever is lower, if the chemical is an extremely hazardous substance. Section 311 calls for the submittal of a Material Safety Data Sheet for each hazardous chemical present above minimum threshold levels or a listing of such chemicals associated hazard information. The listing must be updated within 3 months of any change to the list, including new hazard information or the addition of new chemicals. Section 312 requires the annual submittal of more detailed quantity and storage information regarding the same list of chemicals. This information is submitted in the form of a tier two report.

The Hanford Site provides appropriate hazardous chemical inventory information to the Washington State Emergency Response Commission, three local emergency planning committees, and to both the Richland and Hanford Fire Departments. Updated Material Safety Data Sheet listings were issued in April and October 1996 and January 1997, covering changes occurring in calendar year 1996. The 1996 *Tier Two Emergency and Hazardous Chemical Inventory* (DOE 1997a) was issued in March 1997.

Under Section 313, facilities must report total annual releases of certain listed toxic chemicals. The Pollution

Prevention Act adds additional information requirements to the submittal, and Executive Order 12856 (EPA 1993) extends the requirements to all federal facilities, regardless of the types of activities conducted there. A toxic chemical release inventory report consists of release, waste transfer, and source reduction information for each toxic chemical that is manufactured, processed, or otherwise used in amounts over specific activity threshold levels.

The 1995 toxic chemical release inventory report (DOE 1996a) was issued in August 1996. This report consisted of information regarding releases, offsite transfers, and source reduction activities involving ethylene glycol, the sole toxic chemical used in excess of applicable activity thresholds during 1995. The toxic chemical release reporting status for 1996 was confirmed in May 1997. Evaluation of toxic chemical use information showed that no reporting thresholds were exceeded in 1996.

Table 2.2.1 provides an overview of 1996 Emergency Planning and Community Right-To-Know Act reporting.

## Pollution Prevention Program

As part of Section 313 of the Emergency Planning and Community Right-To-Know Act toxic chemical release inventory reporting program, a pollution prevention program has been established that requires an annual evaluation of the use and release of 17 specific priority chemicals (benzene, cadmium and cadmium compounds, carbon tetrachloride, chloroform, chromium and chromium compounds, cyanides, dichloromethane, lead and lead compounds, mercury and mercury compounds, methyl ethyl ketone, methyl isobutyl ketone, nickel and nickel compounds, tetrachloroethylene, toluene, trichloroethane, trichlorethylene, and xylene[s]). This program seeks to reduce releases of pollutants through avoidance or reduction in the generation of pollutants at their source.

The 17 priority chemicals targeted for reduction in this program are a subset of the chemicals listed in Section 313 of this Act. The thresholds listed in the Act are used to determine participation. DOE was committed to reducing the releases of these 17 priority chemicals by 50% (compared to the 1988 baseline) by 1995, and this commitment was met for the Hanford Site. Each DOE site annually evaluates its use and release of these 17 priority chemicals. The information is provided to DOE Headquarters, where it is aggregated for an annual progress report provided to the EPA. Hanford did not exceed the reporting threshold for the use of any of the 17 priority chemicals during 1996.

The Hanford Site pollution prevention program was designed to meet the requirements of DOE Orders 5400.1 and 5820.2A, *The Waste Minimization/Pollution Prevention Cross Cut Plan 1994* (DOE 1994b), EPA program guidance, and Washington State pollution prevention

**Table 2.2.1**. Emergency Planning and Community Right-to-Know Act Compliance Table, 1996[a]

| Emergency Planning and Community Right-to-Know Act Sections | Yes | No | Not Required |
|---|---|---|---|
| 302-303: Planning Notification | X[b] | | |
| 304: EHS[c] Release Notification | | | X |
| 311-312: MSDS[d]/Chemical Inventory | | | X |
| 313: TRI[e] Reporting | X | | |

(a) "Yes" indicates that notifications were provided and/or reports were issued under the applicable provisions. "No" indicates that notifications or reports should have been provided but were not. "Not Required" indicates that no actions were required under the applicable provisions, either because triggering thresholds were not exceeded or no releases occurred.
(b) These notifications apply to the Hanford Site but were completed prior to 1996.
(c) Extremely Hazardous Substance.
(d) Material Safety Data Sheet.
(e) Toxic Chemical Release Inventory.

planning requirements Washington Administrative Code (WAC) 173-307. The major elements of the program are 1) establishment of management support; 2) identification and implementation of pollution prevention opportunities through an assessment process; 3) setting and measuring the progress of waste reduction goals; 4) development of waste generation baseline and tracking systems; 5) creation of employee awareness, training, and incentives programs; 6) championing sitewide pollution prevention initiatives; and 7) technology transfer, information exchange, and public outreach. The pollution prevention opportunity assessment is the cornerstone of the pollution prevention program and is the primary mechanism used to identify and prioritize options to prevent pollution and reduce waste. These assessments are performed on waste-generating activities by a team of individuals selected for their process knowledge.

These assessments are a systematic approach to identify the materials entering, the pollutants and wastes exiting, and the activities making up a waste generating process. Potential pollution prevention opportunities are identified, evaluated, and prioritized according to environmental, health, safety, and economic criteria. Once pollution prevention opportunities have been prioritized, schedules are developed, and the viable opportunities are implemented.

# Resource Conservation and Recovery Act

## Hanford Facility Resource Conservation and Recovery Act Permit

The Hanford Facility Resource Conservation and Recovery Act permit (#WA7890008967) was issued by the Washington State Department of Ecology and EPA in August 1994 and has been in effect since late September 1994 (e.g., DOE 1997b). The permit provides the foundation for all future Resource Conservation and Recovery Act permitting at the Hanford Site in accordance with provisions of the Tri-Party Agreement.

## Resource Conservation and Recovery Act/Dangerous Waste Permit Applications and Closure Plans

For purposes of the Resource Conservation and Recovery Act and Washington State's dangerous waste regulations (WAC 173-303), the Hanford Site is considered to be a single facility encompassing over 60 treatment, storage, and disposal units. The Tri-Party Agreement recognized that all of the treatment, storage, and disposal units cannot be permitted simultaneously and set up a schedule for submitting unit-specific Part B Resource Conservation and Recovery Act/dangerous waste permit applications and closure plans to the Washington State Department of Ecology and EPA. During 1996, 40 Part A Form 3s, 1 Part A Form 1, and 1 Part B permit application were certified and submitted to the Washington State Department of Ecology. In addition, two addenda to previously submitted notices of intent for expansion were filed with the Washington State Department of Ecology, and four closure actions were completed.

## Resource Conservation and Recovery Act Groundwater Monitoring Project Management

Table 2.2.2 lists 28 Resource Conservation and Recovery Act facilities and units (or waste management areas) that require groundwater monitoring and their monitoring status. Samples were collected from approximately 240 wells in 1996. This is a reduction from 300 sampled wells in 1995 and reflects primarily the DOE's groundwater project integration effort and discontinued sampling at closed or inactive Resource Conservation and Recovery Act facilities. The groundwater samples were analyzed for a variety of dangerous waste constituents and site-specific constituents, including selected radionuclides. The constituent lists meet the minimum Resource Conservation and Recovery Act regulatory requirements and are integrated to supplement other groundwater project (e.g., sitewide surveillance) requirements at Hanford. One new Resource Conservation and Recovery Act well was installed in 1996 to fulfill groundwater monitoring requirements for the 216-A-37-1 Crib in the 200-East Area.

The 183-H Solar Evaporation Basins in the 100-H Area and the 300 Area Process Trenches are included in the sitewide Resource Conservation and Recovery Act permit (#WA7890008967) and are subject to final-status regulations. A final-status groundwater monitoring program for the 183-H Solar Evaporation Basins was initiated in September 1995. The 300 Area Process Trenches initiated final-status groundwater monitoring in December 1996. The other sites listed in Table 2.2.2 are subject to interim-status regulations at this time. Table 2.2.2 also lists the year the sites will be incorporated (Part B

**Table 2.2.2**. Hanford Site Interim- and Final-Status Groundwater Monitoring

| TSD[a] Units | Interim-Status TSD[a] Unit Groundwater Monitoring: Indicator Parameter Evaluation[b] | Interim-Status TSD[a] Unit Groundwater Monitoring: Groundwater Quality Assessment, Date Initiated | Final-Status TSD[a] Unit Groundwater Monitoring: Detection Evaluation | Final-Status TSD[a] Unit Groundwater Monitoring: Compliance Evaluation | Regulatory Requirements | Associated (CERCLA)[c] Groundwater Operable Units | Year Scheduled for Part B or Closure |
|---|---|---|---|---|---|---|---|
| 120-D-1 Ponds | X | | | | 40 CFR 265.93(b)<br>WAC 173-303-400 | 100-HR-3 | 1998[d] |
| 183-H Solar Evaporation Basins | | | | X | WAC 173-303-645 (10) | 100-HR-3 | 1994[d] |
| 1301-N LWDF[e] | X | | | | 40 CFR 265.93(b)<br>WAC 173-303-400 | 100-NR-2 | 1999[d] |
| 1324-N/NA Pond | X | | | | 40 CFR 265.93(b)<br>WAC 173-303-400 | 100-NR-2 | 1998[d] |
| 1325-N LWDF[e] | X | | | | 40 CFR 265.93(b)<br>WAC 173-303-400 | 100-NR-2 | 1999[d] |
| 216-B-3 Pond | | X, 1990 | | | 40 CFR 265.93(d)<br>WAC 173-303-400 | 200-PO-1 | 2000[d] |
| 216-A-29 Ditch | X | | | | 40 CFR 265.93(b)<br>WAC 173-303-400 | 200-PO-1 | 2000[d] |
| 216-A-10 Crib[f] | X | | | | 40 CFR 265.93(b)<br>WAC 173-303-400 | 200-PO-1 | >2000[d] |
| 216-A-36B Crib[f] | X | | | | 40 CFR 265.93(b)<br>WAC 173-303-400 | 200-PO-1 | >2000[d] |
| 216-A-37-1 Crib[f] | | X, 1997 | | | 40 CFR 265.93(d)<br>WAC 173-303-400 | 200-PO-1 | >2000[d] |
| 216-B-63 Trench | X | | | | 40 CFR 265.93(b)<br>WAC 173-303-400 | 200-PO-1 | >2000[d] |
| 216-S-10 Pond | X | | | | 40 CFR 265.93(b)<br>WAC 173-303-400 | | >2000[d] |

**Table 2.2.2**. (contd)

| TSD[a] Units | Interim-Status TSD[a] Unit Groundwater Monitoring: Indicator Parameter Evaluation[b] | Interim-Status TSD[a] Unit Groundwater Monitoring: Groundwater Quality Assessment, Date Initiated | Final-Status TSD[a] Unit Groundwater Monitoring: Detection Evaluation | Final-Status TSD[a] Unit Groundwater Monitoring: Compliance Evaluation | Regulatory Requirements | Associated (CERCLA)[c] Groundwater Operable Units | Year Scheduled for Part B or Closure |
|---|---|---|---|---|---|---|---|
| 216-U-12 Crib | | X, 1993 | | | 40 CFR 265.93(d)<br>WAC 173-303-400 | 200-UP-1 | >2000[d] |
| LERF[g] | X | | | | 40 CFR 265.93(b)<br>WAC 173-303-400 | | >2000[h] |
| LLBG[i] WMA-1[j] | X | | | | 40 CFR 265.93(b)<br>WAC 173-303-400 | | >2000[h] |
| LLBG[i] WMA-2[j] | X | | | | 40 CFR 265.93(b)<br>WAC 173-303-400 | | >2000[h] |
| LLBG[i] WMA-3[j] | X | | | | 40 CFR 265.93(b)<br>WAC 173-303-400 | | >2000[h] |
| LLBG[i] WMA-4[j] | X | | | | 40 CFR 265.93(b)<br>WAC 173-303-400 | 200-ZP-1 | >2000[h] |
| LLBG[i] WMA-5[j] | Discontinued in 1995 | | | | 40 CFR 265.93(b)<br>WAC 173-303-400 | | >2000[h] |
| WMA-A-AX[j] SST[k] | X | | | | 40 CFR 265.93(b)<br>WAC 173-303-400 | | >2000[d] |
| WMA-B-BX-BY[j] SST[k] | | X, 1996 | | | 40 CFR 265.93(d)<br>WAC 173-303-400 | | 1998[d] |
| WMA-C[j] SST[k] | X | | | | 40 CFR 265.93(b)<br>WAC 173-303-400 | 200-PO-1 | >2000[d] |
| WMA-S-SX[j] SST[k] | | X, 1996 | | | 40 CFR 265.93(d)<br>WAC 173-303-400 | 200-UP-1 | 1998[d] |
| WMA-T[j] SST[k] | | X, 1993 | | | 40 CFR 265.93(d)<br>WAC 173-303-400 | 200-ZP-1 | 1998[d] |

**Table 2.2.2**. (contd)

| TSD[a] Units | Interim-Status TSD[a] Unit Groundwater Monitoring: Indicator Parameter Evaluation[b] | Interim-Status TSD[a] Unit Groundwater Monitoring: Groundwater Quality Assessment, Date Initiated | Final-Status TSD[a] Unit Groundwater Monitoring: Detection Evaluation | Final-Status TSD[a] Unit Groundwater Monitoring: Compliance Evaluation | Regulatory Requirements | Associated (CERCLA)[c] Groundwater Operable Units | Year Scheduled for Part B or Closure |
|---|---|---|---|---|---|---|---|
| WMA-TX-TY[j] SST[k] | | X, 1993 | | | 40 CFR 265.93(d)<br>WAC 173-303-400 | 200-ZP-1 | 1998[d] |
| WMA-U[j] SST[k] | X | | | | 40 CFR 265.93(b)<br>WAC 173-303-400 | 200-ZP-1 | 1998[d] |
| 316-5 Area Process Trenches[l] | | X | | X (1996 to final status) | WAC 173-303-645 (10) | 300-FF-5 | 1996[d] |
| NRDWL[m] | X | | | | 40 CFR 265.93(b)<br>WAC 173-303-400 | 200-PO-1 | >2000[d] |

(a) Treatment, storage, and/or disposal.
(b) Specific parameters (pH, specific conductance, total organic carbon, and total organic halogen) used to determine if a facility is affecting groundwater quality. Exceeding the established limits means that additional evaluation and sampling are required (groundwater quality assessment). An X in the column indicates whether an evaluation was needed or an assessment was required.
(c) Comprehensive Environmental Response, Compensation and Liability Act.
(d) Closure/postclosure plan; treatment, storage, and/or disposal unit will close under final status.
(e) Liquid waste disposal facility.
(f) 216-A-10, 216-A-36B, and 216-A-37-1 cribs will be combined in fiscal year 1997 into one Resource Conservation and Recovery Act monitoring unit. Resource Conservation and Recovery Act monitoring will be performed according to interim-status groundwater quality assessment requirements.
(g) Liquid Effluent Retention Facility.
(h) Part B permit; treatment, storage, and/or disposal unit will operate under final-status regulations beginning in year indicated.
(i) Low-Level Burial Ground.
(j) Waste Management Area.
(k) Single-Shell Tank.
(l) At the end of calendar year 1996, these will move from an interim-status assessment monitoring evaluation (required by regulatory consent agreement and compliance order [Ecology and EPA 1986]) to a final-status compliance monitoring evaluation.
(m) Nonradioactive Dangerous Waste Landfill.
> = Beyond the year 2000.

or closure) into the Hanford Facility Resource Conservation and Recovery Act permit.

Resource Conservation and Recovery Act groundwater monitoring has been discontinued at the 2101-M Pond and at Low-Level Burial Ground Waste Management Area 5 in the 200-West Area. The 2101-M Pond was certified clean and was closed by the state in October 1995; groundwater monitoring ceased in June 1995. Monitoring at Low-Level Burial Ground Waste Management Area 5 in the 200-West Area was discontinued because the site remains inactive and has never operated; it, therefore, did not require monitoring. In May 1995, the Washington State Department of Ecology directed DOE to begin a groundwater quality assessment monitoring program at the S-SX single-shell tank farms in the 200-West Area in accordance with WAC 173-303-400 and 40 CFR 265.93(d). This was in response to a finding that specific conductance in downgradient wells exceeded the critical mean for the waste management area. A groundwater quality assessment monitoring program was initiated at the S-SX Tank Farms in August 1996.

The results of groundwater monitoring are discussed in Section 4.8, "Groundwater Protection and Monitoring Program."

## Resource Conservation and Recovery Act Inspections

Regulatory agency inspections at the Hanford Site by the Washington State Department of Ecology in 1996 increased by 25% over the number of inspections performed in 1995. The increase was mainly due to an increase in the number of regulatory agency inspectors and the development of the air operating permit scheduled to be issued in 1997 by the Washington State Department of Ecology. DOE and its contractors are working to resolve outstanding notices of violation and warning letters of noncompliance from the Washington State Department of Ecology that were received during 1996. Each of these notices lists specific violations. There were 12 notices of violation and warning letters in 1996. Of the 12, 3 have had all corrective actions completed and have been closed. Two of the 1996 issues were formal violations, with one that resulted in a $90,000 penalty. Below is a brief summary of the most significant of these issues.

- The Washington State Department of Ecology issued a voluntary compliance letter to DOE for noncompliant conditions at the 222-S Laboratory in the 200-West Area. An inspection was conducted in September 1996 in response to an event where the mixing of incompatible chemicals caused a plastic container to pressurize and breach, spraying the room with acid solution. No one was injured. The letter outlined six violations concerning hazardous waste storage and management. Corrective measures were begun after the September 1996 inspection. Another inspection in February 1997 showed that corrective actions had not been completed to the Washington State Department of Ecology's satisfaction. The Washington State Department of Ecology announced in May 1997 a fine in the amount of $90,000 for failing to correct all of the violations. DOE and its contractors are continuing to work with the Washington State Department of Ecology to ensure that their expectations for waste management at the 222-S Laboratory are met.

- The Washington State Department of Ecology issued a voluntary compliance letter, which was followed by a formal notice of penalty. The issue concerned the storage of incompatible waste in a product storage cabinet at the 306-E Development, Fabrication, and Testing Laboratory in the 300 Area. The fine was paid and the notices have been informally closed.

- The Washington State Department of Ecology issued a voluntary compliance letter for conditions found at the 3705-D and 3706-D facilities in the 300 Area. These facilities house photographic developing equipment. The Washington State Department of Ecology had waste designation and generator record-keeping concerns with some of the generated wastes. DOE and the management and integration contractor continue to discuss these concerns with the Washington State Department of Ecology.

- The Washington State Department of Ecology issued a voluntary compliance letter for acceptance of potentially incompatible waste into the Central Waste Complex in the 200-West Area. The waste was generated by the Lawrence Berkeley National Laboratory, Berkeley, California. The issue stemming from this investigation is that Central Waste Complex personnel failed to verify that the waste generator was properly designating the waste prior to shipping it to the Central Waste Complex. All corrective measures have been met. A letter has been received from the Washington State Department of Ecology closing out this issue.

- The Washington State Department of Ecology issued a notice of penalty in the amount of $5,000 for an alleged violation revealed through an investigation into dangerous waste management at the 183-H Solar Evaporation Basins closure project. Specifically, the notice states that training requirements, as specified in the closure plan, were not met.

## Clean Air Act

The Washington State Department of Health's Division of Radiation Protection enforces state regulatory controls for radioactive air emissions as allowed under the Clean Air Act, Section 118. These controls are applicable to federal facilities such as the Hanford Site. WAC 246-247 requires applicable controls and annual reporting of all radioactive air emissions. The Hanford Site operates under a state license for such emissions. The conditions specified in the license will be incorporated into the upcoming Hanford Site air operating permit, scheduled to be issued in 1997 in accordance with Title V of the Clean Air Act and 1990 amendments and the state program under WAC 173-401. The air operating permit will include both radioactive emissions now covered by licenses and nonradioactive emissions.

Revised Clean Air Act requirements for radioactive air emissions were issued in December 1989 under 40 CFR 61, Subpart H. The total emissions from the Hanford Site's DOE operations are within the state and EPA offsite emission standard of 10 mrem/yr. The 1989 requirements for flow and emissions measurements, quality assurance, and sampling documentation have been implemented at nearly all Hanford Site sources.

Reporting and monitoring requirements necessitate evaluation of all radionuclide emission points on the Hanford Site to determine those subject to continuous emission measurement requirements in 40 CFR 61, Subpart H. In February 1994, the hazardous air pollutants federal facility compliance agreement for the Hanford Site were approved. This agreement was signed by the EPA Region 10 and DOE, and provides a compliance plan and schedule that is being followed to bring the Hanford Site into compliance with the Clean Air Act, as amended, and its implementing regulations in 40 CFR 61. All Federal Facility Compliance Act milestones were met during 1996.

EPA has delegated authority to Washington State for regulating certain hazardous pollutants under the National Emission Standards for Hazardous Air Pollutants (40 CFR 61). These standards are designed to protect the public from hazardous air pollutants (e.g., arsenic, asbestos, beryllium, mercury, radionuclides, and vinyl chloride). The Washington State Department of Ecology enforces state regulatory controls for air contaminants as allowed under the Washington Clean Air Act, Revised Code of Washington (RCW) 70.94. These requirements (e.g., WAC 173-400 and 173-460) specify applicable controls, reporting, notifications, permitting, and general standards for the Hanford Site sources.

Pursuant to 40 CFR 61, Subpart M, EPA has promulgated regulations specifically addressing asbestos emissions. These regulations apply at the Hanford Site in building demolition and/or renovation and waste disposal operations. The asbestos is handled according to the *Hanford Site Asbestos Abatement Plan* (Bechtel Hanford, Inc. 1995). The plan is updated annually and contains an inventory of all buildings on the Hanford Site that contain asbestos as well as an annual projection of the amount of asbestos to be handled and disposed.

Title VI of the Clean Air Act of 1990 Amendments requires regulation of the use and disposal of ozone-depleting substances through the requirements in 40 CFR 82. The site management and integration contractor was assigned the lead by DOE directive to coordinate the development of a sitewide plan to implement the Title VI requirements. Ozone-depleting substance management on the Hanford Site is administered through the sitewide implementation plan (DOE 1994c) that was prepared and issued during 1994. This implementation plan is being updated periodically to reflect changing federal regulations.

The Benton County Clean Air Authority enforces Regulation 1, which pertains to detrimental effects, fugitive dust, open burning, odor, opacity, and asbestos handling. The Benton County Clean Air Authority has been delegated the authority to enforce EPA asbestos regulations under the national emission standards for hazardous air pollutants (40 CFR 61). In 1996, the site maintained compliance with the regulations.

During 1996, Hanford Site air emissions remained below all regulatory limits set for radioactive and other pollutants. Routine reports of air emissions were provided to each air quality agency in accordance with requirements.

## Clean Air Act Enforcement Inspections

The DOE and its contractors are working to resolve outstanding compliance findings from the Washington State Departments of Health and Ecology inspections. Each of these findings lists specific violations. There were four Washington State Department of Health notices in 1996. There was one Washington State Department of Ecology notice of violation and it is closed. A brief summary of the most significant of these issues follows.

- The Washington State Department of Health issued a notice of violation and compliance order to DOE after two inspectors were denied access into portions of B Plant's emission units in the 200-East Area. The compliance order required the DOE to initiate a new standard of access for regulators. As a result, a standard set of requirements was formally issued. The Washington State Department of Health determined the response was satisfactory and later closed this issue by formal letter.

- The Washington State Department of Health issued a notice of correction for records retrievability stemming from an inspection in the tank farms in the 200 Areas. DOE requested technical assistance from the Washington State Department of Health, and meetings were held to discuss the time frame for retrieving required documents. The Washington State Department of Health determined that a 24-hour retrieval time for required documents will be the standard, with some exceptions. Formal notification of the new standard has not been received, so this issue remains open.

- The Washington State Department of Ecology issued a notice of violation for the historical operation of the steam boiler plants in the 200-East, 200-West, and 300 Areas. The Washington State Department of Ecology alleges that the DOE is in violation of state regulations for failure to apply for and obtain the required state prevention of significant deterioration permit, operated the 300 Area boiler without a permit, and violated the requirement to meet emission limits set for the boiler. DOE and Washington State Department of Ecology agreed to a consent order and the notice of violation is closed.

# Clean Water Act

The Clean Water Act applies to point source discharges to waters of the United States. At the Hanford Site, the regulations are applied through National Pollutant Discharge Elimination System (40 CFR 122) permits governing effluent discharges to the Columbia River.

A request for minor modification was submitted to EPA in August 1995 for permit #WA-000374-3 to remove the 100-N Area inactive outfalls from the monitoring and reporting requirements in the permit. The EPA indicated in a conference call that DOE could discontinue monitoring of the outfalls without a permit modification, with the exception of the well that monitors N Springs at the 100-N Area. A formal response has not been received from the EPA. The remaining active outfalls at Hanford include two located in the 100-K Area (outfalls 003 and 004) and one in the 300 Area (outfall 013). There were two instances of noncompliance, one related to pH and the other to oil and grease, for this permit in 1996 (Table 2.2.3).

Permit #WA-002592-7 covers the 300 Area Treated Effluent Disposal Facility, which had 10 permit exceedences in 1996. All 10 cases were the result of effluent levels exceeding the National Pollutant Discharge Elimination System permit limits. This disposal facility was in normal operations and meeting design specifications at the time of these events. All indications suggest that the facility is unable to consistently meet the restrictions of the facility's National Pollutant Discharge Elimination System permit despite the use of the best available technology. Preparations for permit renegotiations are under way in accordance with the 1-year operating history review period specified when the permit was issued. A revised permit is expected to be issued in 1997.

The site is covered by two storm water permits (WAR-00-000F, WAR-10-000F). In compliance with these permits, the annual comprehensive site compliance evaluation was performed and documented, and the pollution prevention plan was updated. No instances of noncompliance occurred in 1996.

Refer to Table 2.2.3 for a summary of all water permit exceedances and noncompliances in 1996.

**Table 2.2.3**. Water Permit Exceedances or Noncompliances

| Permit Type | Outfall | Parameter | Date(s) Exceeded | Comments |
|---|---|---|---|---|
| National Pollutant Discharge Elimination System | 004 (100-KE Area) | pH | December 1996 | None |
| National Pollutant Discharge Elimination System | 1301 (N Springs, 100-N Area) | Oil and grease | October 1996 | Postulated that petroleum-contaminated groundwater plume migrated to well vicinity. Plume is being addressed as a Comprehensive Environmental Response, Compensation, and Liability Act action |
| National Pollutant Discharge Elimination System | 300 Area Treated Effluent Disposal Facility | Cyanide | January 1996 | Laboratory analysis did not meet all requirements |
| National Pollutant Discharge Elimination System | 300 Area Treated Effluent Disposal Facility | Total suspended solids | February 1996, May 1996 | None |
| National Pollutant Discharge Elimination System | 300 Area Treated Effluent Disposal Facility | Copper | March 1996, May 1996, November 1996, December 1996 | None |
| National Pollutant Discharge Elimination System | 300 Area Treated Effluent Disposal Facility | Arsenic | July 1996, December 1996 | None |
| National Pollutant Discharge Elimination System | 300 Area Treated Effluent Disposal Facility | Bioassay | August 1996 | Statistically significant reduction in fathead minnow growth rate |
| State Waste Discharge Permit | 200 Areas Effluent Treatment Facility | Sulfate | August 1996, November 1996 | Attributed to dissolution of calcium sulfate in soil surrounding monitoring wells |
| State Waste Discharge Permit | 200 Areas Effluent Treatment Facility | Iron | May 1996 | Attributed to corrosion products in old piping |
| State Waste Discharge Permit | 400 Area Secondary Cooling Water | Total dissolved solids | September 1996, November 1996 | Cooling towers identified as source. System operations were modified |

## Liquid Effluent Consent Order

Washington State Department of Ecology liquid effluent consent order (DE 91NM-177), which regulates Hanford Site liquid effluent discharges to the ground, contains compliance milestones for Hanford Site liquid effluent streams designated as Phase I, Phase II, and Miscellaneous Streams. Waste discharge permit applications are being submitted to the Washington State Department of Ecology for all liquid effluent streams required by the consent order. One liquid waste discharge permit was issued by the Washington State Department of Ecology in 1996 for 400 Area secondary cooling water.

Two noncompliances with the Effluent Treatment Facility permit (ST-4500) occurred when elevated levels of sulfate were detected in groundwater monitoring wells near the state-approved land discharge outfall. The elevated sulfate levels were attributed to calcium sulfate being dissolved in the soil surrounding the monitoring wells.

A noncompliance issue at the Effluent Treatment Facility occurred when elevated levels of iron were detected in the facility's effluent. The elevated iron levels were attributed to corrosion products on old piping becoming suspended in the effluent.

The miscellaneous streams plan and schedule (DOE 1994d) was approved by the Washington State Department of Ecology in February 1995. This plan and schedule address how and when the remaining miscellaneous streams will become compliant with state regulations. The plan and schedule proposed that categorical permits be submitted to ensure the efficient use of both state and federal resources in the permit development. The first categorical permit application for hydrotest (pressure test), construction, and maintenance discharges was submitted to the Washington State Department of Ecology in November 1995. Permit issuance is expected in 1997. A second permit application for cooling water and condensate discharges was developed and submitted to the Washington State Department of Ecology in September 1996. A third categorical permit application will be prepared for storm-water discharges. This application is expected to be transmitted to the Washington State Department of Ecology in September 1997.

# Safe Drinking Water Act

The national primary drinking water regulations of the Safe Drinking Water Act apply to the drinking water supplies at the Hanford Site. These regulations are enforced by the Washington State Department of Health. The Hanford Site water supplies are monitored for the contaminants listed in the rules and regulations of the Washington State Department of Health regarding public water systems (WAC 246-290). In 1996, all drinking water systems on the site were in compliance with requirements and agreements. There are currently 12 surface-water and groundwater systems at Hanford.

# Toxic Substances Control Act

The Toxic Substances Control Act requirements applied to the Hanford Site essentially involve regulation of polychlorinated biphenyls. Federal regulations for use, storage, and disposal of polychlorinated biphenyls are found in 40 CFR 761. The Washington State dangerous waste regulations for managing polychlorinated biphenyl wastes are listed in WAC 173-303.

Electrical transformers have been sampled and characterized. Fourteen transformers (those having a polychlorinated biphenyl concentration greater than 500 ppm) remain in service. Schedules have been developed and are being followed for the replacement and disposal of these transformers.

Defueled, decommissioned reactor compartments shipped by the United States Navy to the Hanford Site for disposal contain small quantities of polychlorinated biphenyls, which are tightly bound in the composition of solid materials such as thermal insulation, cable coverings, and rubber. Because polychlorinated biphenyls are present, the reactor compartments are regulated under this Act. A compliance agreement between EPA and DOE defines the process by which a chemical waste landfill approval under this Act will be issued for the disposal trench. The EPA Region 10 will grant a Toxic Substances Control Act authorization for the disposal site after the Washington State Department of Ecology has issued a dangerous waste permit.

Nonradioactive polychlorinated biphenyl waste is stored and disposed of in accordance with 40 CFR 761 requirements. Radioactive polychlorinated biphenyl waste remains in storage onsite pending the development of adequate treatment and disposal technologies and capacities. A DOE-wide federal facilities compliance agreement, allowing the storage of radioactive polychlorinated biphenyl wastes beyond the regulatory limit set forth in 40 CFR 761, was approved in August 1996. This agreement includes a requirement for submittal of an annual report to EPA describing the wastes being stored. The first report was submitted to DOE Headquarters to allow consolidation and submittal by February 8, 1997, the date required in the Federal Facility Compliance Act. Also in 1996, the Pacific Northwest National Laboratory continued research under a research-and-development permit from the EPA to study degradation of polychlorinated biphenyls in waste matrices.

## Federal Insecticide, Fungicide, and Rodenticide Act

The Federal Insecticide, Fungicide, and Rodenticide Act is administered by EPA. The standards administered by the Washington State Department of Agriculture to regulate the implementation of the Act in Washington State include: Washington Pesticide Control Act (RCW 15.58); Washington Pesticide Application Act (RCW 17.21); and rules relating to general pesticide use codified in WAC 16-228. At the Hanford Site, all pesticides are applied by commercial pesticide operators who are listed on one of two commercial pesticide applicator licenses. In 1996, the Hanford Site was in compliance with these state and federal standards regulating the storage and use of pesticides.

## Endangered Species Act

Many rare species of native plants and animals are known to occur on the Hanford Site. Two of these (i.e., bald eagle and peregrine falcon) are listed by the U.S. Fish and Wildlife Service as endangered or threatened. Others are listed by the Washington State Department of Fish and Wildlife as endangered, threatened, or sensitive species (Appendix F). The site wildlife monitoring program is discussed in Section 6.2, "Ecosystem Monitoring (Plants and Wildlife)."

Bald eagles, a threatened species, are seasonal visitors to the Hanford Site. Prior to 1992, only a few nesting attempts had been observed on the site, and none were successful. Beginning in 1994 (in compliance with the Hanford Site's bald eagle management plan (Fitzner and Weiss 1994) and Section 7 of the Endangered Species Act), access roads in the nesting areas are closed each year from January 15 until the potential nesting birds either successfully rear their young or abandon the nest sites. If nesting activities at the historic nest sites are not observed in January and early February, then access roadways are not restricted. In 1996, a new nest was built by a pair of eagles, and all access roads were immediately closed. Despite these efforts, the eagles eventually left the area without successfully nesting.

As part of the National Environmental Policy Act review process, an ecological review is conducted on all projects both on and off the site to evaluate the potential of affecting federally and/or state-listed species within the proposed project area (Neitzel 1996). The ecological review includes quantifying impacts that might result, and identifying mitigation strategies to minimize or eliminate such impacts. Reviews have been conducted on an ongoing basis. There were no additional compliance issues during 1996.

## National Historic Preservation Act, Archaeological Resources Protection Act, Native American Graves Protection and Repatriation Act, and American Indian Religious Freedom Act

Cultural resources on the Hanford Site are subject to the provisions of these four Acts. Compliance with the applicable regulations is accomplished through an active management and monitoring program that includes a review of all proposed projects to assess potential impacts on cultural resources, periodic inspections of known archaeological and historic sites to determine their condition and eligibility for listing on the National Register of Historic Places, determination of the effects of land management policies on the sites and buildings, and management of a repository for federally owned archaeological

collections. In 1996, 271 reviews were requested and conducted on the Hanford Site.

The American Indian Religious Freedom Act requires federal agencies to help protect and preserve the rights of Native Americans to practice their traditional religions. DOE cooperates with Native Americans by providing site access for organized religious activities.

There were no compliance issues during 1996.

# National Environmental Policy Act

The National Environmental Policy Act requires preparation of an environmental impact statement to analyze the impacts associated with major federal actions that have the potential to significantly affect the quality of the human environment. Other National Environmental Policy Act documents include the environmental assessment, which is prepared to determine if a proposed action has a potential to significantly impact the environment and, therefore, would require the preparation of an environmental impact statement. Certain types of actions may fall into categories that have already been analyzed by DOE and have been determined not to result in a significant environmental impact. These actions, which are categorical exclusions, are exempt from further National Environmental Policy Act review. Typically, over 20 categorical exclusions are documented annually at the Hanford Site, involving a wide variety of actions by multiple contractors.

The Council on Environmental Quality, which reports directly to the President, was established to oversee the National Environmental Policy Act process. National Environmental Policy Act documents are prepared and approved in accordance with Council on Environmental Quality National Environmental Policy Act regulations (40 CFR 1500-1508), DOE National Environmental Policy Act implementation procedures (10 CFR 1021), and DOE Order 451.1. In accordance with DOE Order 451.1, DOE documents prepared for Comprehensive Environmental Response, Compensation, and Liability Act projects are required to incorporate National Environmental Policy Act values such as analysis of cumulative, offsite, ecological, and socioeconomic impacts to the extent practicable in lieu of preparing separate National Environmental Policy Act documentation.

## Recent Environmental Impact Statements

A final environmental impact statement for Plutonium Finishing Plant stabilization at the Hanford Site was issued in May 1996 (DOE 1996b). The proposed action would clean out inactive Plutonium Finishing Plant complex facilities (except the storage areas), stabilize reactive residual plutonium-bearing materials to a form suitable for long-term storage, and store the stabilized material until final storage and disposition decisions are made. The Record of Decision was issued in July 1996 (61 Federal Register [FR] 36352).

A final environmental impact statement for management of spent nuclear fuel from the K Basins at the Hanford Site was issued in February 1996 (DOE 1996c). The proposed action would remove spent nuclear fuel from the K Basins for storage in a new facility in the 200-East Area pending availability of a repository for disposal or future decision for reuse of the material. Sludge, water, and debris from the K Basins also would be disposed of at the Hanford Site in existing facilities. The purpose for this action is to prevent the release of radionuclides through the soil column to the Columbia River in the event of the failure of the K Basins. The Record of Decision was issued in March 1996 (61 FR 10736).

A final environmental impact statement, prepared by the United States Navy and adopted by DOE for disposal of decommissioned, defueled cruiser, Ohio class, and Los Angeles class naval reactor plants at the Hanford Site was issued in April 1996 (U.S. Department of the Navy 1996). The proposed action would remove naval reactor compartments from cruisers and Ohio and Los Angeles class submarines. The compartments would be transported to the Hanford Site for shallow land disposal. The environmental impact statement was adopted by DOE in April 1996. The Record of Decision was issued in July 1996 (61 FR 41596).

A final environmental impact statement for the Hanford Reach of the Columbia River was issued in June 1994 (National Park Service 1994). The proposed action would designate the Hanford Reach of the Columbia River a recreational river under the National Wild and Scenic Rivers System, and designate the Wahluke Slope and Columbia River corridor areas of the DOE's Hanford Site a wildlife refuge under the U.S. Fish and Wildlife Service. The Record of Decision was issued in July 1996 (Babbitt 1996).

A final environmental impact statement, coprepared by the Washington State Department of Ecology and DOE, for the Hanford Site's tank waste remediation system was issued in August 1996 (DOE and Ecology 1996). The proposed actions would retrieve radioactive wastes from double- and single-shell waste tanks at the Hanford Site and stabilize wastes in forms suitable for disposal. The Record of Decision was issued in February 1997 (62 FR 8693).

## Programmatic Environmental Impact Statements in Progress

A programmatic environmental impact statement is being prepared by DOE Headquarters Office of Environmental Restoration and Waste Management. The environmental impact statement will evaluate a broad range of alternatives for the configuration of new and expanded waste management facilities. A draft environmental impact statement was issued in August 1995.

## Site-Specific Environmental Impact Statements In Progress

A programmatic environmental impact statement is being prepared for the Hanford Remedial Action Program. The proposed action would develop a coordinated strategy for remediation of hazardous and radioactive waste sites through a comprehensive land use plan (also being prepared). A draft environmental impact statement was issued in August 1996. It is expected that the final environmental impact statement will be issued during 1997.

# Hanford Site Permitting Summary

The Hanford Site has obtained, or is in the process of obtaining, numerous environmental permits. The permits and their status are summarized in *Annual Hanford Site Environmental Permitting Status Report* (Thompson 1996). For Resource Conservation and Recovery Act permitting, the Hanford Site is considered a single facility and has been issued one EPA identification number. The identification number encompasses over 60 treatment, storage, and/or disposal units. (Three additional identification numbers were effective in January 1997. However, these do not apply to treatment, storage, and disposal facilities.) The initial permit was issued for less than the entire facility because all units cannot be permitted simultaneously. The permit, through the permit modification process, will eventually incorporate all units.

Implementation of the Clean Air Act is facilitated by several permits. Title V of the Act requires an air operating permit for major stationary sources. The Hanford Site is applying for an air operating permit expected to be issued in November 1997. A prevention of significant deterioration permit covers the airborne discharge of certain pollutants from Hanford facilities. Significant increases in allowed emissions require an approved modification of the permit. Air permitting regulatory approvals must be obtained prior to constructing or modifying facilities that emit regulated pollutants. To date, 29 approvals have been obtained from the Washington State Department of Ecology, 146 from the Washington State Department of Health, and 95 from the EPA. These numbers change as a result of continuing activities that require air permitting. The regulatory authority differs for each agency.

The sitewide and 300 Area Treated Effluent Disposal Facility pollutant discharge elimination system permits govern liquid process effluent discharges to the Columbia River. The national pollutant discharge storm-water general permit governs storm-water discharges to the Columbia River. Waste discharge permits are required by WAC 173-216. These permits are summarized earlier in this section under "Liquid Effluent Consent Order."

Other Hanford Site permitting addressed in the permitting status report (Thompson 1996) includes research, development, and demonstration; solid waste handling; onsite sewage systems; and permitting of underground petroleum storage tanks.